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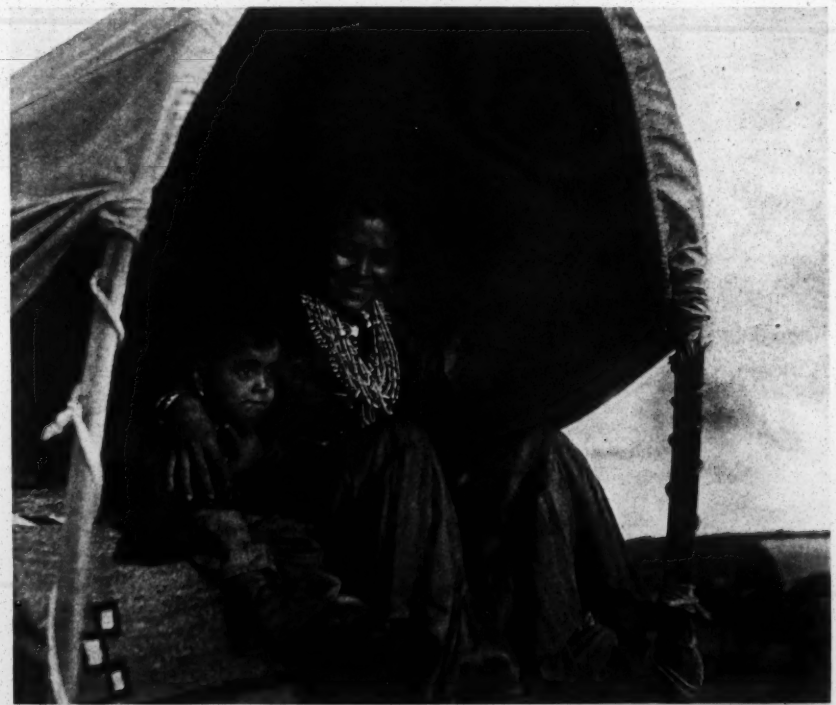

ANDRE DE DIENES

AWAY FROM HOME, A NAVAJO SON OF THE DESERT LOOKS STARRY-EYED AT THE WONDERS OF THE NON-RESERVATION WORLD

Mother puts a reassuring arm on the lad's shoulder. They left their *hogan* home to attend the annual Inter-Tribal Ceremonies at Gallup, New Mexico. Their cushion is a Navajo blanket, this one not for sale! The nomadic Navajos borrowed the art of weaving from the sedentary Pueblo Indians and made it a basic economic asset. Navajo rugs and blankets have world-wide sale. Wool for weaving comes from the tribe's large flocks, which now seriously overgraze the dry range (Bulletin No. 3).

Bulletin No. 1, December 8, 1947

Sweden's Arctic Ore Makes City of Kiruna

WHAT town lies about 100 miles north of the Arctic Circle, is 112 miles long, and has iron mountains in its backyard?

The little Swedish iron-mining community of Kiruna (illustration, next page), scheduled soon to be incorporated as a city, answers this description and boasts many other unusual features.

Situated in far-north Swedish Lapland, 600 miles north of Stockholm, Kiruna is the center of one of the world's richest iron districts. The ore comes from the near-by twin mountains of Kirunavaara and Luossavaara, whose iron content is so high that magnetic compasses run wild within several miles of them.

Iron Mountains Gradually Being Cut Down

The legend goes that Kirunavaara's iron deposits were discovered when a Lapp hunter put his steel knife down on its slopes and was unable, because of the magnetism, to pick it up again.

The find turned out to be one of Sweden's most productive mines, now owned jointly by the state and private interests. Gradually the iron mountains are being cut down, as the ore is recovered by what amounts to quarrying methods, but there are immense reserves. An American counterpart of Kiruna's iron mountains is Mesabi Range in Minnesota.

One of the world's most northerly railways was built by the government to link Kiruna with sea outlets for foreign markets. Now electrified, it is the northernmost electric railway in the world. This line carries most of the ore to the Norwegian port of Narvik, near the mingled waters of the North Atlantic and the Arctic Ocean.

Narvik is conveniently close to the Kiruna district. Because of the warm Gulf Stream flowing its way, Narvik's harbor is ice free, while Sweden's Baltic port of Luleå, the southern terminus on the same railway, is often frozen over.

Surrounded by Lapland

Kiruna, which will have a 112-mile spread after being incorporated with the neighboring rural district, will include only about 15,000 inhabitants. The wage earners bring home more pay and work in better conditions than most other European workmen. They ride to work on free streetcars. After work they enjoy the traditional Swedish steam and hot and cold baths in the company's bathing rooms. Their children go to free schools and receive dental and health care.

Around this oasis of European culture spreads the cold, sparsely settled region of Lapland, with its Mongol-descended Lapps. Perpetually snow-crowned mountains and lonely forests merge northward into the barren tundra where this nomadic people moves its reindeer herds about in search of grazing areas. Around Kiruna, however, many Lapps have settled in permanent homes and villages.

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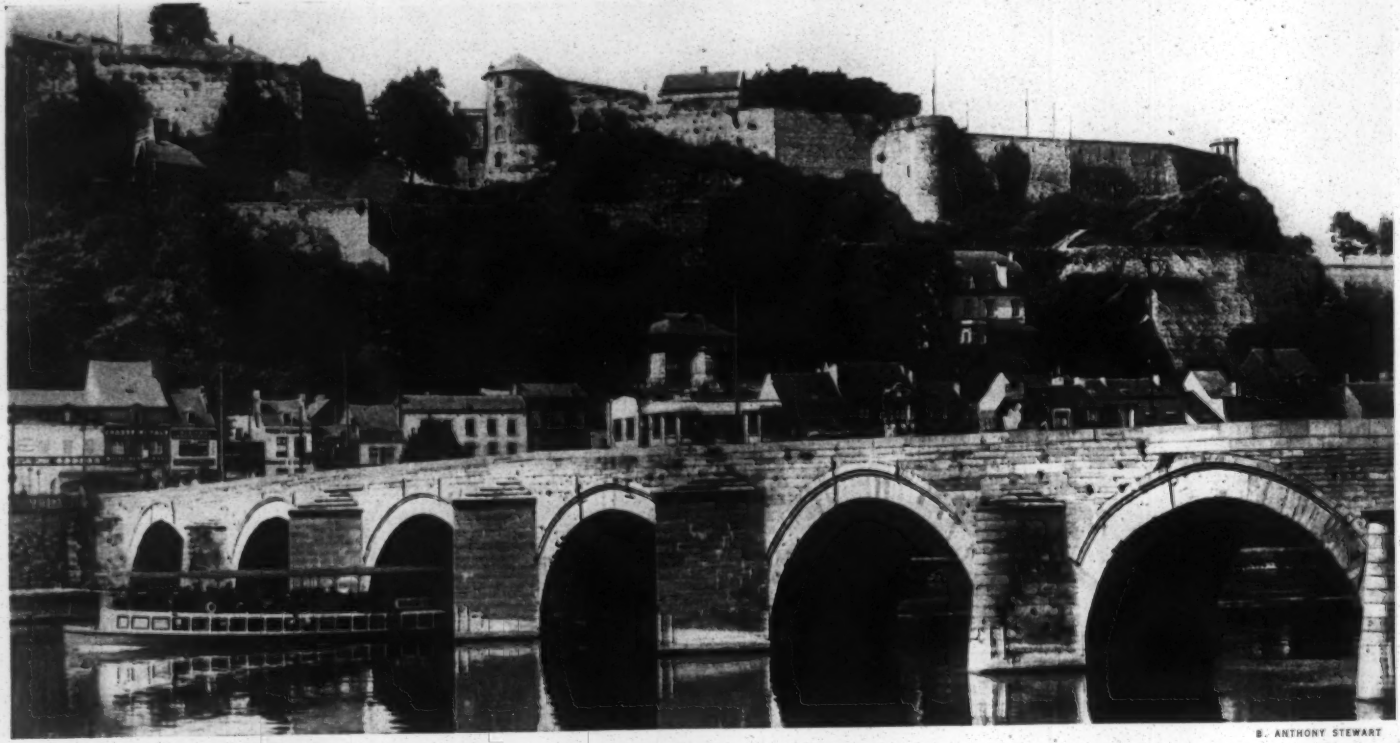

B. ANTHONY STEWART

NAMUR'S OUTMODED FORTRESS AND ANCIENT BRIDGE, SOUVENIRS OF A STRIFE-TORN PAST, NOW WITNESS PEACEFUL RIVER TRAFFIC

For more than half a century, Namur's ancient citadel, crowning the 480-foot plateau at the confluence of the Meuse and Sambre rivers, has been a peaceful relic surrounded by pleasure grounds. Built on the site of a Roman fort, and the castle of the counts of Namur (of which two towers remain), the massive fortifications have had no military significance since 1893, when, under a new defense plan, nine forts were built in outlying areas of Namur. Below the fortress, the buttressed arches of a bridge built in the 11th century—the only really old stone bridge across the Belgian Meuse—lead to the suburb of Jambes on the east bank of the river. The small boat passing under the bridge arch (left) is carrying a shaded deckful of passengers upriver to Dinant, 17 miles from Namur. Below Namur, across the border in the Netherlands, the Meuse becomes the Maas. The customs union will simplify commerce on the rivers which weave a network over the Low Countries and their neighbors (Bulletin No. 2).

Bulletin No. 2, December 8, 1947

Low Countries, Luxembourg Form Customs Tie

BELGIUM, the Netherlands, and Luxembourg, in establishing a customs union called "Benelux," have made the first step toward abolishing economic barriers in these north-European lands long associated with tulips and poppies, windmills, dikes, and wooden shoes.

Nearly 18,000,000 people are affected in the two kingdoms of Belgium and the Netherlands, and the tiny Grand Duchy of Luxembourg. Though the total area is smaller than that of Maine, the region holds extensive iron and coal deposits, and has industrial and commercial interests reaching around the world.

Uranium in Belgian Congo

The Netherlands and Belgium, in addition, have huge holdings overseas. Before the postwar independence struggles in the Netherlands Indies, Netherlands exporters supplied world markets with a large proportion of such valuable commodities as rubber, oil, tin, and quinine.

The Belgian Congo, in central Africa, has recently attained new importance as a source of uranium ores used in producing atomic power. Among its varied raw materials also are included copper, palm oil, peanuts, gold, and diamonds.

At home, the Low Countries—the Netherlands and Belgium (illustration, inside cover)—fight a never-ending battle against the North Sea's encroachments. Broad stone and earthen dikes, rising high along the Netherlands shore, protect the flat, fertile farmlands and the green meadows where grazing cattle indicate increasing restoration of the prewar dairy industry.

Drainage and soil reconditioning are overcoming salt-water flood damage caused by retreating Germans. To expand its international shipping, the Netherlands has bought a number of converted wartime vessels from the United States.

Steel Production Chief Wealth of Luxembourg

Next-door Belgium, too, is reviving its peacetime industries. Its commercial history goes back to medieval traffic, when the old Flemish towns of Gent (Ghent), Ieper (Ypres), and Brugge (Bruges) exchanged Belgian flax and fine laces for English wool and French wines. Out of this early commerce, Belgium built some of Europe's finest medieval cathedrals and town halls.

Intensively cultivated farm and grazing lands in the Luxembourg highlands (illustration, next page), rising from southern Belgium, account for many of the same products as those of the neighboring countries.

The chief wealth of the duchy, however, is in its iron ores and steel production. Its 300,000 people normally turned out about half as much iron ore as Germany, and as much steel as Italy. Surplus iron long has been shipped to the manufacturing plants of Belgium, with which Luxembourg has been united in a separate customs union since 1922.

Together, the Low Countries and Luxembourg form a compact geo-

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Lying north of the Arctic Circle, Kiruna is well within the land of the midnight sun. In summer, the sun shines brightly nearly 24 hours a day. Winter brings corresponding hours of prolonged darkness. In the middle of winter the sun hardly rises above the horizon and there is barely an hour or so of faint light every day.

Northern Sweden's abundant water power, however, has proved a boon for the people of the Kiruna area. The streams have been dammed to provide power. Electricity brings light, heat, and home conveniences to Kiruna's model mining community. It furnishes the power that runs the railway and operates the mines' mechanical shovels. Floodlight systems keep work going during the long winter twilights.

The Industrial Revolution came late to Sweden. As recently as 1870, 72 per cent of the population lived by the soil. But Sweden's tardy start has been counterbalanced by its neutrality in both world wars.

NOTE: Kiruna may be located on the Society's map of Europe and the Near East. Write the Society's headquarters, Washington 6, D. C., for a price list of maps.

For further information, see "The Nomads of Arctic Lapland," in the *National Geographic Magazine* for November, 1939*; and "Sweden, Land of White Birch and White Coal," October, 1928. *(Issues marked with an asterisk are included in a special list of Magazines available to teachers in packets of ten for $1.00.)*

G. HEURLIN

MAGIC MOUNTAINS OF IRON ORE RISE BEHIND KIRUNA, IN NORTHERNMOST SWEDEN

The lakeside town is the shipping point for the ore, which is mined from open pits on the mountains. An electrified railroad connects Kiruna with both Atlantic and Baltic Sea waters.

GEOGRAPHIC MAPS—TIMELY AIDS TO EDUCATION

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Bulletin No. 3, December 8, 1947

United States Indian Population Increases

THE Office of Indian Affairs, again in Washington after its wartime sojourn in Chicago, counts as its wards about 400,000 Indians in the United States proper, plus 33,000 Indians, Eskimos, and Aleuts in Alaska. The reservations and tribal land areas which the office manages would cover two Pennsylvanias.

Besides the Indians on reservations, there are many who, well adjusted to the white man's manner of living, have stepped off the reservations to lead their own lives. Scattered groups like the Powhatans have always lived independently of federal land stewardship.

No Longer a Vanishing Race

The Indian population is scarcely less than half the number that roamed the region in the time of Columbus. In 1492, there were about 846,000 Indians in the area of the present 48 states, ethnologists say. Columbus, sailing westward, believed he had reached India's east coast; so he gave the name "Indians" to the dark-hued natives who peered through the trees at his ships.

Through most of the present century, there has been a steady increase in population on reservations, well distributed among the 150 or more tribes. Health education and medical care have brought Indian birth and death rates in recent years ever closer to those for the nation as a whole. Thus, in total figures, the American Indian is no longer a vanishing race, though many individual tribes have died out, or are represented today by only a tiny fraction of their original numbers.

Some 55,000 Navajos (illustration, cover) in northern Arizona and New Mexico lead the nation's tribal groups in both numbers and land. Mostly full-blooded, they speak little English. Shifting with their herds according to the season over their vast West Virginia-sized reservation, they wring a living from the semi-arid hills. The Office of Indian Affairs has warned that, because of overgrazing, a winter of privation confronts the Navajos unless relief is arranged.

Cherokees, largely in Oklahoma with a remnant in North Carolina, are second in numbers with 50,000. The Sioux, or Dakotas; the Chippewas, centered along Minnesota's Canadian border; and the Choctaws of Oklahoma are other large tribes—all counting 20,000 or more members.

Some Tribes Ready to Leave Reservations

Among states, Oklahoma lists a fourth of the Indians on United States reservation lands. Twenty reservations, adding up to the area of Connecticut, are homes for 30 tribes. To this former Indian Territory, many tribes migrated during the white man's westward expansion. Arizona and New Mexico hold another fourth of the total. They are followed in order by South Dakota, California, Montana, and Minnesota.

About 50,000 Indians in ten tribal groups are regarded as ready to shed federal supervision. In this class are California's 22,000 Indians of different tribes, the Klamaths of Oregon, the Menominees of Wisconsin,

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graphic region, linked by a thick network of railroads, and served, through connecting canals and streams, by the great artery of the Rhine.

NOTE: Belgium, the Netherlands, and Luxembourg appear on the Society's map of Germany and Its Approaches.

For further information, see "Holland Rises from War and Water," in the *National Geographic Magazine* for February, 1946; "Low Countries Await Liberation," August, 1944*; "Behind Netherlands Sea Ramparts," February, 1940*; "Belgium—Europe in Miniature," April, 1938; and "The Grand Duchy of Luxemburg," November, 1924.

See also, in the GEOGRAPHIC SCHOOL BULLETINS, October 27, 1947, "Bicycle Lack Hampers Netherlands Recovery;" and "Walcheren Island, Sentinel of the Schelde Estuary," November 27, 1944.

Reopened Albert Canal Joins Liége to Antwerp

Reconstruction of the Albert Canal across northern Belgium provides opportunity for peacetime trade on this waterway which was completed only a month before the outbreak of World War II. The 79-mile canal was heavily damaged during the German invasion of Belgium in 1940. Its destroyed bridges and locks have been rebuilt.

Connecting Belgium's teeming port of Antwerp on the Schelde River with the industrial city of Liége on the Meuse, this all-Belgian waterway puts Liége goods closer to world commerce. It provides better access to Monsin Basin coal, creates additional factory sites, and supplies water for farm irrigation use.

Prior to the construction of the Albert Canal in the 1930's, coal had been brought to Liége over an old canal which had 24 locks and was about 20 miles longer. Five miles of its course was in the Netherlands. Customhouses, locks, swing bridges, and other factors sometimes delayed shipment for days.

The more efficient Albert Canal has only six locks and no swing bridges. It accommodates 2,000-ton barges as against the 600-ton limit on the old canal. In some stretches it runs between 40-foot embankments above the surrounding country. Embankments, locks, and deep cuts exposed the canal to vandalism by the retreating Germans.

MAYNARD OWEN WILLIAMS

REMINISCENT OF "THE ANGELUS," MILLET'S PAINTING, IS THIS HOEING SCENE IN REMICH, A GRAPE-GROWING COMMUNITY ON THE MOSELLE RIVER IN TINY LUXEMBOURG

Bulletin No. 4, December 8, 1947

Buttons Tree Grown or "Fished" from Rivers

HEM lines may rise or fall, shoulders narrow or widen, but the useful little button apparently goes on forever.

Ever since man discovered the advantages of buttons over strings as a means of fastening clothes, buttons have increased and multiplied both in variety and employment. They become "costume jewelry"—cemented to small screwed rings, they adorn ears by the thousands; sewed to the top of a cap, they mark rank in China; lining up for the count, "Rich man, poor man, beggar man, thief," they even figure as fortunetellers.

Plastics Compete with "Pearls"

It takes buttons by the billion to fasten and adorn the clothing of the American people. About ten billion buttons annually—70 for each man, woman, and child in the United States—are turned out by some 300 United States factories in normal years.

Old established leaders in number and value are the "pearl" buttons, cut largely from Mississippi River mussel shells (illustration, next page). Ocean shells from far Pacific islands furnish more expensive pearl buttons. Plastic materials have captured an important share of the button market in the last decade. Buttons of bone, wood, and glass have big fields of use. Buttons are cut from sheets of metal and cast from molten metal poured into molds.

But when woolen cloth is tailored into suits and overcoats, buttons that grow on trees in the South American tropics continue to hold favor. The nation's button makers call on Ecuador's tagua, or corozo, palm almost exclusively for the "ivory nuts" from which they carve half a billion buttons in some years.

The tagua palm grows wild in the steaming lowland jungles of the Pacific coast from Panama to Peru. Its cousin, the jarina, is a similar stunted palm fern which grows in Brazil's upper Amazon valley. Big bur clusters develop all the year round close to the stumpy trunks of both species. The nuts removed from the mature clusters look very much like small potatoes.

West-coast Nuts Are Fine-grained

Laborers with machetes crack open the tough, woody burs and take 15 to 100 nuts from each cluster. The nuts, which take a full year to form, are at first a clear, thirst-quenching liquid. Then they thicken to a sweet, milky substance. Finally, they solidify into "vegetable ivory." The tagua nuts of the west coast are generally finer-grained and more like the ivory of elephant tusks than are those that grow in the lowlands east of the high Andes range. The small nuts are finer-grained than the large ones. They range in size from that of a hickory nut to the dimensions of a horse chestnut.

Ecuador's nut harvesters make enormous rafts of featherweight balsa wood, load them with several tons of tagua nuts, and float down the many tributaries of the Guayas River to Guayaquil. There they sell both the

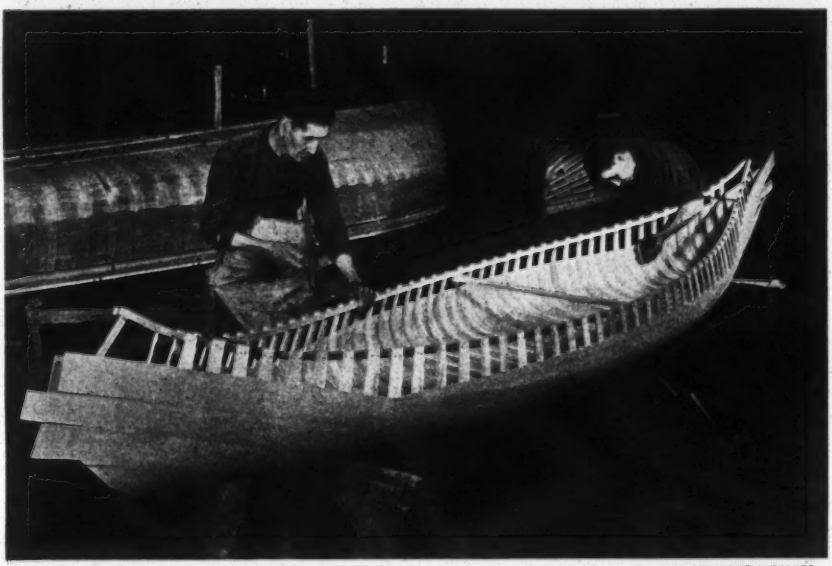
and the Osages of Oklahoma. Other tribes may soon follow this trend.

More than 25,000 Indians were in the armed services during World War II, while an additional 40,000 engaged in war industries. Their lists of casualties and valor-award winners were long. The tribesmen displayed special aptitudes for scouting, patroling, signaling, and commando-style fighting. Largely because of their fine record as volunteers in World War I, native-born Indians were extended citizenship in 1924.

Half the 48 states bear Indian names, as do thousands of lakes, rivers, and places. Indian moccasins, canoes (illustration, below), blankets, rugs, pottery, games, food, songs, and art are deeply rooted in everyday American life.

Often thought of as the "original" American, the Indian himself is an immigrant to the New World. His ancestors wandered into America from Asia by crossing from Siberia during the latter part of the Ice Age. Also generally unrealized is the great diversity in race and culture among the tribes. Some, including the Iroquoian Six Nations and the Southwest Pueblo dwellers, were truly "civilized" when found by white men. Others, such as the Paiutes of Utah, had advanced only to the stage of digging for rodents and ants for livelihood.

NOTE: For further information on the Indians of North America, see "Indian Life Before the Colonists Came," in the *National Geographic Magazine* for September, 1947; "Indians of Southeastern United States," January, 1946; "Indians of Our North Pacific Coast," January, 1945*; "Indians of Our Western Plains," July, 1944; "Indian Tribes of Pueblo Land," November, 1940; and "America's First Settlers, the Indians," November, 1937; and, in the GEOGRAPHIC SCHOOL BULLETINS, see "Indian Signs Gave Red Men Common Language," February 12, 1945; and "Pungent Pumpkin Is Indians' Gift to Pie," November 20, 1944.



HARRISON HOWELL WALKER

WITH THIN PLANKS OF WOOD INSTEAD OF BIRCH BARK, INDIAN WORKMEN COVER A CANOE FRAME

These Penobscot braves live on their tribal reservation near Bangor, Maine, and work in the near-by Old Town Canoe Company shops. The modern adaptation of an Indian invention on which they labor will be much more durable, but heavier and less maneuverable, than its birchbark ancestor.

Bulletin No. 5, December 8, 1947

Pacific Trust Territory Has Simple Economy

THE United States Trusteeship for the territory of the Pacific islands —what is it?

Commonly called the Trust Territory, it is the huge area of water and land specks in the central Pacific which the United States administers as a United Nations trusteeship. Included are all the Marshall, Caroline, and Marianas islands (except Guam in the Marianas which has been an American possession since 1898).

50,000 New Wards for Uncle Sam

Micronesia, another name for these island groups (plus the Gilberts), means "small islands." The largest, Ponape, covers only about 145 square miles. More than half of the remaining 1,400 fragments are mere rocks and reefs, washed over by foaming waves, or burning under the hot sun.

Between the two world wars, this area was Japan's under a League of Nations mandate. When the United States wrested the islands from the Japanese, it inherited, along with strategic defense bases, 50,000 wards living under a more-or-less primitive economy.

Pearl culture, tropical farming, the collection of tortoise shells for ornaments, and gathering sea slugs for Chinese soups are among the means of livelihood practiced by the islanders. The resources of Micronesia are chiefly agricultural. Most islands have a uniformly warm climate, plenty of rainfall, and in places a fertile soil. Copra (dried coconut meat), sugar, alcohol, and guano—together with tunny and bonita from the fisheries—provided considerable exports to Japan.

Even before the war was over, United States authorities were growing, on occupied islands, fresh vegetables and fruits to supplement canned and packaged foods for the Pacific armed forces. Recent economic surveys suggest development possibilities in native handicrafts including shell ornaments, fans, woven handbags, rugs, and clothing.

Islands Were Spanish, then German

Before the white man came, the Micronesians, a mixed race with predominant Malayan and Polynesian strains, led simple lives (illustration, next page). They easily subsisted on the bounty of wild breadfruit, coconut, pandanus, and mango trees, and on yams, bananas, and starchy roots grown in small garden patches. Fishing was good in the open sea and in the shallows along white, sandy beaches. Barter trade was carried on among the closer neighbors.

After annexation by Spain in 1686, the islands became a stop for traffic between colonial Latin America and the Philippines. Ships of other nations called, exchanging western trinkets and goods for tropical products. In 1899, Germany bought all the islands except Guam, which had been ceded to the United States. An active colonization and development program, including agricultural experiments, was started.

Micronesia's greatest economic changes came, however, under the Japanese mandate which replaced German rule. Tens of thousands of

cargo and the logs of the raft which carry it. Ecuador's taguas are also transported by muleback and other transportation to the coastal ports of Bahia, Manta, and Esmeraldas.

Most of the ivory nuts are sawed into flat slices, sorted for size, and sacked in loose-mesh bags for shipping. Some are shipped whole. A small proportion is made into buttons at Manta or carved into curios.

Tagua nuts normally rank fifth among Ecuador's exports. In prewar years, France, Germany, and Italy were big customers. Some Italian manufacturers utilize the seed of the *palma dum* from neighboring Egypt as a substitute for the tagua from more distant Ecuador.

Vegetable ivory won out in competition with synthetic materials on big wartime contracts for buttons for military uniforms, and is again being imported to the United States in the average 6,000-ton volume that prevailed a decade ago.

It is nearly a century since tagua came to the rescue of the button business which was becoming hard up for animal ivory. As a substitute, tagua serves admirably, even having some advantages over the animal-supplied material. It absorbs dye rapidly and can easily be dyed to match materials of many colors and shades. Its chief limitation is its small size. Thus, while it is not large enough for piano keys, it is used for umbrella handles, chessmen, toys and ornaments in great variety—and for billions of buttons.

J. BAYLOR ROBERTS

WHAT APPEARS TO BE A GAME IS REALLY A JOB FOR THESE MUSCATINE, IOWA, MISSES

As button "blanks" pour from the machine grinding off the rough surface of the shell, the girls look them over and remove imperfect ones. The disks then pass through a machine that drills the holes and trims the edges. The button industry came to Muscatine literally "by accident." A swimmer cut his foot on a sharp object, investigated, and found a bed of mussel shells. He devised a process for making buttons from these oysterlike, fresh-water shells. The method was a closely guarded secret for some time. Though no watch dogs are employed by modern factories, visitors are not encouraged.

Japanese colonists came from the homeland to work in the mines and fisheries, and on sugar, pineapple, and tapioca plantations. To grow more products faster, soil from some of the fertile volcanic islands was transferred to thinly surfaced spots.

Angaur Island, in the battle-scarred Palau group, long has been noted as a rich source of phosphate ore, valuable for fertilizer. Some supplies of bauxite, for aluminum, have been reported.

Under the various ruling flags many of the islanders learned to use modern commercial products. Village trading stores stocked soap, knives, calico, and kerosene, and occasionally sewing machines or bicycles. The United States introduced jeeps, bulldozers, chewing gum, and chocolate.

But nature's products are still negotiable exchange, and native shell "money," fine mats, and huge "millstones" that no pickpocket would look at, remain as symbols of wealth and prestige.

NOTE: The island groups comprising Micronesia may be located on the National Geographic Society's map of the Pacific Ocean, on which they appear in large-scale insets.

For further information, see "Adventures with the Survey Navy," in the *National Geographic Magazine* for July, 1947; "Operation Crossroads" (10 color photographs), February, 1947; "American Pathfinders in the Pacific," May, 1946; "Victory's Portrait in the Marianas" (17 paintings), November, 1945*; "Our New Military Wards, the Marshalls," September, 1945; "South from Saipan," April, 1945*; and "Hidden Key to the Pacific," June, 1942.*

W. ROBERT MOORE

A MARSHALL ISLANDER HEWS A WOODEN BOWL WHICH HIS WIFE WILL USE FOR SERVING FOOD